Decontamination, Dismantling and Decommissionin

Many of the INEEL's facilities and mechanisms for waste management and other operations have aged and must be replaced. This includes decontaminating, dismantling and decommissioning (removing) inactive and surplus facilities and structures at the INEEL.

In the past 23 years, 27 of the INEEL's original 45 surplus facilities have been decommissioned. In the last four years, more than 100 facilities have been demolished. Additionally, 200 facilities are scheduled for some type of decontamination and demolition in the next decade.

The D&D&D program is using many new technologies to reduce risk and cost and accelerate remedial actions. For instance, the remotely controlled Surveillance and Monitoring (SAM) system deployed at Test Area North in 2000 is expected to result in a savings of $7.4 million over the next 10 years.

In 2000, D&D&D workers and equipment also supported emergency response efforts to control range fires at the INEEL. No injuries to workers or damage to facilities or buildings were suffered. Extensive fire preparations included 30-foot defoliated zones around potentially threatened facilities.

More information on the D&D&D program can be found on the web at **www.inel.gov/environment.**

2000 Highlights

- Completed decontamination and demolition of the old Central Facilities Area Sewage Treatment Plant
- Completed demolition of the subsurface portion of the Initial Engine Test Facility at Test Area North
- Provided emergency response to control range fires at the INEEL
- Completed plan to restore INEEL infrastructure.

2001 Major Goals

- Complete demolition of Security Training Facility
- Begin D&D&D of three Test Area North buildings.

Highlight

In the past year, 31 technologies have been deployed, exceeding the INEEL's goal by a factor of ten. Many of these technologies were used to support the D&D&D program. More information on these technologies can be found at **http://tech.inel.gov**

Fire crews man the fire line near the Test Reactor Area. All firefighters are equipped with dosimeters to monitor gamma, beta and alpha radiation.

Air Samples Monitored

Range fires at the INEEL in 2000 raised concerns about airborne contaminants, especially during the 49,000-acre Tea Kettle fire in July. As expected from the increased levels of particulates, increased levels of gross alpha and beta radioactivity were reported. These types of radioactivity result from both naturally-occurring or man-made radionuclides.

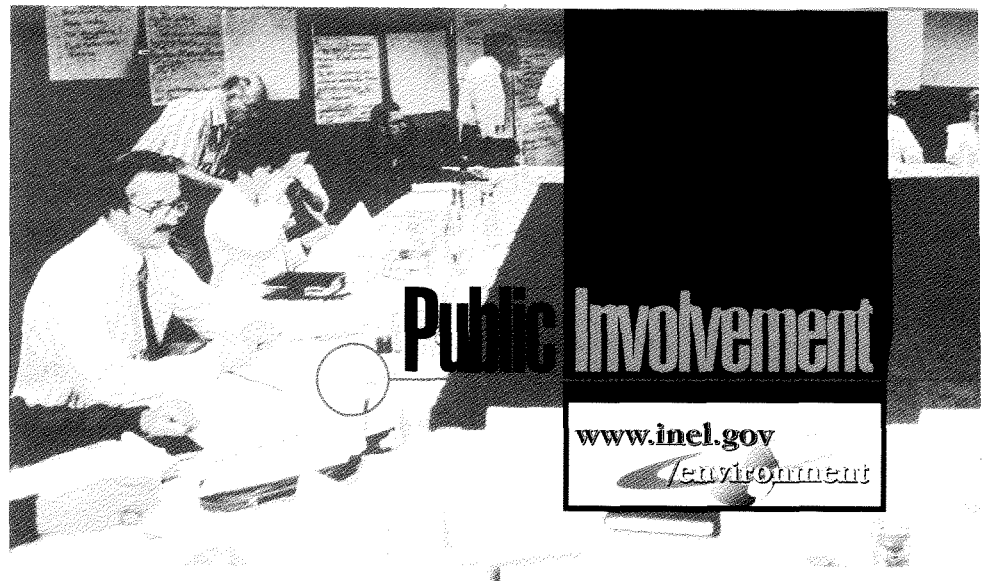
Air samples taken before, during and after the Tea Kettle fire were analyzed for americium-241, plutonium-238, -239/240 and uranium-234, -235 and -238, all man-made, alpha-emitting radionuclides. None were found.

No gamma-emitting radionuclides were detected during the fire, though levels of cesium were somewhat elevated during a two-day period following the fire. However, the levels returned to normal background levels on the third day.

Analyses for specific radionuclides are regularly conducted. Any report of elevated levels is studied to determine if the levels are attributable to natural background radiation, fallout from historic nuclear weapons testing or INEEL operations.

The state of Idaho's INEEL Oversight Program publishes independent monitoring results and supporting information on their website at **oversite.inel.gov/deqinel**.

Other independent websites providing environmental and ecological monitoring include the Environmental Scien and Research Foundation at **esrf.org** and the INEEL Environmental Surveillance, Education and Research Program at **www.stoller-eser.com**.



DOE's advisory group helps answer mixed waste management issues

In December 2000, an advisory group known as the Blue Ribbon Panel released its recommendations on alternatives to incineration. The DOE-established panel suggested a plan that would allow DOE to meet its commitments to the state of Idaho to remove and dispose of the INEEL's mixed waste. The panel's recommendations will also help determine the direction of DOE's efforts across the country.

Alternatives to incineration in development

The DOE began exploring the use of alternatives to incineration several years ago. In addition to concerns about incineration's potential for the release of toxins into the environment, some DOE wastes simply cannot be incinerated.

A cooperative effort between the DOE, industry and academia has been underway to develop and deploy alternative treatment systems that meet both future regulatory targets and Settlement Agreement deadlines for moving waste out of Idaho.

Several non-thermal treatment options have already been demonstrated and others are being developed.

Technical experts and public will be partners in planning

DOE is planning a national meeting for technical experts and interested members of the public so that by working together, they can make sure the path charted is the right one.

DOE is also broadening opportunities for public involvement. For example, a citizen's working group will be created to monitor progress, provide direct input into technology development efforts and work with citizen's advisory boards already established at DOE's major sites.

The panel's report is on the web at **vm1.hqadmin.doe.gov/seab/**.

Footnote

*The **Blue Ribbon Panel** was appointed by former Secretary of Energy Bill Richardson as part of a settlement of litigation aimed at stopping the construction of an incinerator. A small portion of the mixed radioactive waste now stored at the INEEL is required to be treated before it can be shipped to the Waste Isolation Pilot Plant in New Mexico and the only currently approved treatment method is incineration.*

2001 Public Involvement

National Environmental Policy Act (NEPA) decisions and permitting decisions under the Resource Conservation and Recovery Act (RCRA) may create public involvement opportunities. Two site remediation projects scheduled for public involvement and comment are:

- Record of Decision for the Test Area North contaminated groundwater plume
- Proposed Plan for sitewide ecological risk, contaminated surface sites outside facility boundaries and the Experimental Breeder Reactor-I/ Boiling Water Reactor Experiment.

INEEL Citizen's Advisory Board

The INEEL Citizen's Advisory Board is a federally chartered organization of independent citizens, dedicated to providing informed recommendations on issues specific to the INEEL and of impact to the DOE Idaho Operations Office, EPA Region 10, and the state of Idaho.

In 2000, the 15-member board reviewed numerous issues related to the INEEL, including:

- Incineration at the Waste Experimental Reduction Facility
- Plans for evaluating ecological health at the site
- Rehabilitation of areas affected by wildfire, and
- Proposed remediation plans.

Meetings are open to the public. More information can be found on the web at **www.ida.net/users/cab/**.

Learn more about the INEEL...

Scheduling an informal briefing or taking a tour are some of the ways 31,385 people learned more about the INEEL in 2000. Last year, INEEL representatives gave 297 presentations to schools, colleges, youth groups, civic organizations, technical and trade businesses, educator forums and community events.

During the summer, 7,099 people – 1,009 from 22 foreign countries – toured the Experimental Breeder Reactor-I, a National Historic Landmark. Additionally, 2,395 people participated in 176 tours at the INEEL.

For more information about scheduling a tour or a briefing, call the INEEL at (800) 708-2680.

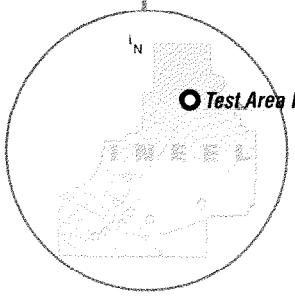
Find information...

Publications and fact sheets on a variety of subjects are available on the Environmental Management program web site at **www.inel.gov/environment**.

Review documents... attend public meetings... share your opinions...

Citizens are encouraged to get involved in decision-making at the INEEL. Participating in dialogue and providing your comments improves the INEEL's understanding of your concerns. Information about opportunities for involvement is available at **www.inel.gov/environment**.

Test Area North



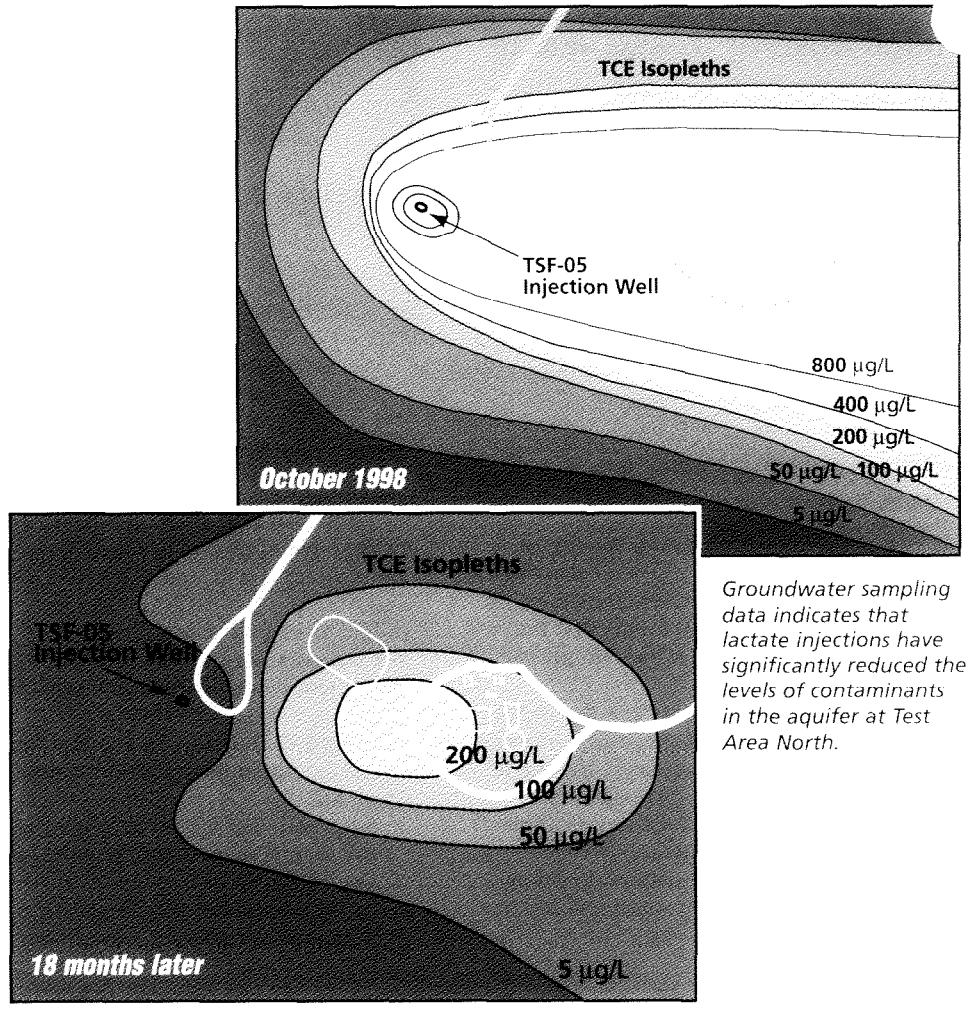
Established: 1951

Original Mission: Aircraft Nuclear Propulsion Program

Later Mission: Investigated core material from the damaged Three Mile Island-II reactor; tested reactors and nuclear fuel; manufacturing operations.

Current Mission: Inspection and storage of spent nuclear fuel; manufacture of armor for military vehicles (at the Specific Manufacturing Facility).

FFA/CO Designation: Waste Area Group 1



Groundwater sampling data indicates that lactate injections have significantly reduced the levels of contaminants in the aquifer at Test Area North.

Waste Treatment, Storage and Disposal

Effort on track to move TMI-II spent fuel

All the remaining Three Mile Island Unit-II spent nuclear fuel and core debris was removed from an outdated underwater storage facility and then dried. The dried debris is being transferred to a temporary dry storage facility at the Idaho Nuclear Technology and Engineering Center.

The remaining Three Mile Island Unit-II spent nuclear fuel and core debris will be transferred before June 2001, meeting the Settlement Agreement milestone.

Remediation

Remediation begins at eight sites

Remediation efforts began in 2000 at eight contaminated areas identified in the comprehensive Record of Decision for Test Area North. The contamination, including metals, radionuclides and volatile organic chemicals, resulted from several decades of operation.

Ninety-seven soft-sided bags were filled with 532 m^3 of contaminated soil and shipped to the Radioactive Waste Management Complex for disposal. Another 761 m^3 of contaminated materials were sent off-site for disposal.

New groundwater remediation strategy presented

The public was asked to comment on the Agencies' Proposed Plan to remediate groundwater contaminated with trichloroethene (TCE) at Test Area North. The proposed remedy uses a combination of three technologies: in situ bioremediation, pump-and-treat and monitored natural attenuation.

In situ bioremediation (biological cleanup conducted in place) was proposed for the most contaminated portion of the aquifer, the "hot spot." This technology is based on the proven concept that over a period of time, naturally occurring bacteria in the groundwater will destroy the TCE contaminants by breaking down the contaminants into harmless end-products.

The bioremediation process begins with the injection of a compound, such as sodium lactate, a harmless food-grade preservative, into the aquifer. The compound feeds the bacteria in the groundwater, so they increase in number. By increasing the amount of bacteria in the groundwater, scientists expect the aquifer to be remediated within 15 years, up to twice as fast and for nearly $23 million less than the originally selected technology of pump-and-treat.

Pump-and-treat technology, which began several years ago, will treat the contaminated water in the "medial zone." More than 26 million gallons of contaminated groundwater were treat-

ed to remove TCE in 2000. A new pump-and-treat facility will replace the existing facility in 2001.

In the least contaminated area of the plume (the "distal area"), the Agencies propose to use monitored natural attenuation. An analysis of ten years of groundwater monitoring data, in conjunction with computer models developed by scientists at the INEEL, shows that contaminants in this part of the plume will naturally attenuate, or break down, during the time frame planned for remediation. The groundwater will be monitored regularly to ensure that the contaminants continue to break down as predicted.

New technologies reduce worker exposure

The Initial Engine Test facility, used from the late 1950s to 1961 for the Aircraft Nuclear Propulsion Program, was dismantled and demolished in 2000. Significant overall savings were achieved by combining several new technologies with improved waste management techniques.

The hand-held radiation detection monitoring system known as SAMS is one of the technologies used to remediate contaminated soils at the PM-2A tanks. The SAMS detector is a substantial improvement on what was used previously. It is simple to operate, requires less sampling, and instead up to waiting 90 days for laboratory analysis, provides data in just minutes. At the PM-2A tanks, the SAMS detector reduced overall costs, worker exposure and waste generation.

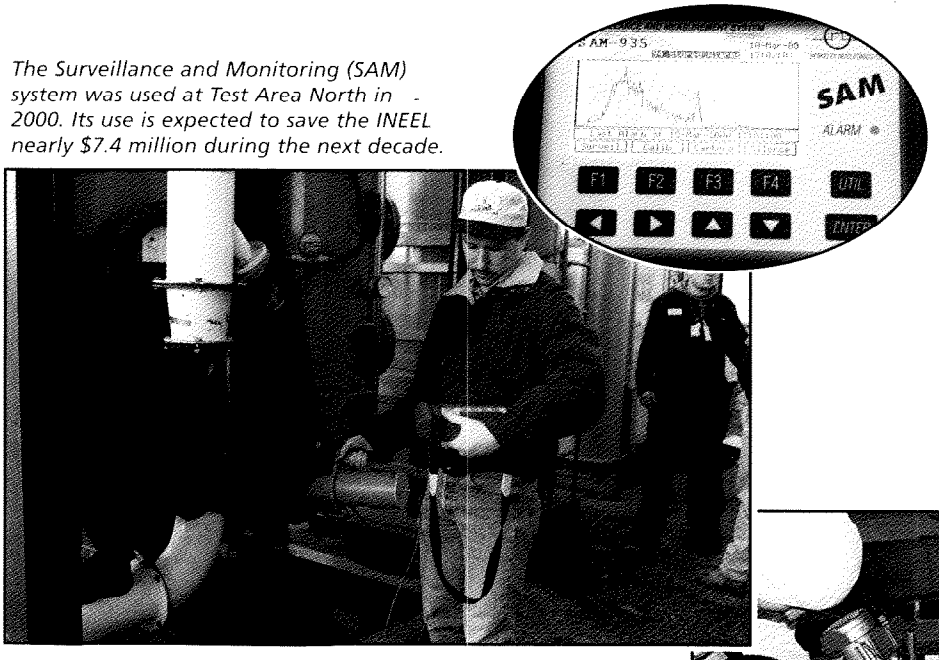
The En-vac Robotic Wall Scabbler is another new technology first used during D&D&D at Test Area North. The scabbler uses an abrasive blasting technology to remove PCB, lead and radioactive-contaminated paint and concrete. It does much of the work that was previously done by hand, lowering risks to workers.

2000 Highlights

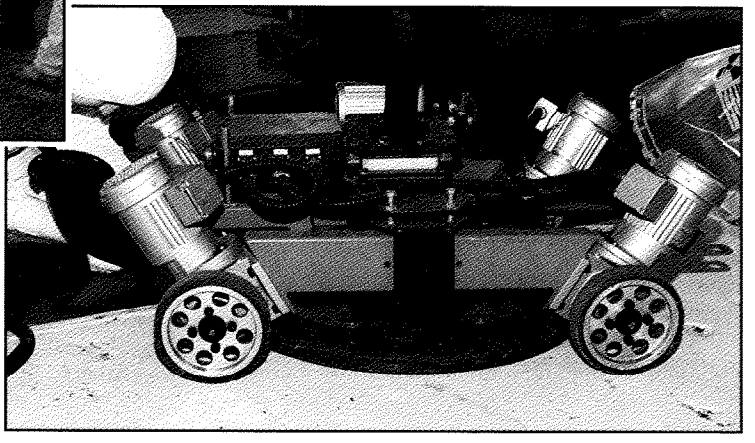
- Completed drying 97 Three Mile Island-II canisters (a Settlement Agreement milestone)
- Transferred 9 shipments of Three Mile Island-II spent debris into dry storage at the Idaho Technology and Engineering Center (a Settlement Agreement milestone)
- Issued Proposed Plan for the Test Area North contaminated groundwater plume (an FFA/CO milestone)
- Began construction of New Pump and Treat Facility
- Initiated remediation of eight sites documented in the 1999 comprehensive Record of Decision
- Incinerated 510 m^3 of combined V-tank and legacy waste on-site
- Shipped 178 m^3 of combined V-tank and legacy waste to an off-site treatment and disposal facility.

2001 Goals

- Begin deactivation of the Test Area North Hot Shop Pools
- Complete transfer of Three Mile Island-II spent nuclear fuel to dry storage (a Settlement Agreement milestone)
- Issue Record of Decision Amendment for final remediation of groundwater contamination (an FFA/CO milestone)
- Complete construction and begin operation of New Pump and Treat Facility (an FFA/CO milestone)
- Characterize Low-Level Waste Rad Treatment System (per VCO agreement)
- Begin sampling V-tanks
- Begin sampling and characterization of 118 tanks or ancillary equipment (per VCO agreement).

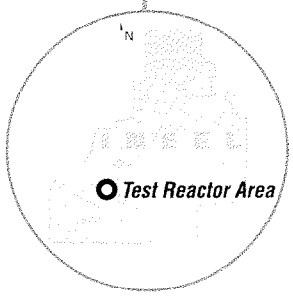


The Surveillance and Monitoring (SAM) system was used at Test Area North in 2000. Its use is expected to save the INEEL nearly $7.4 million during the next decade.



The En-vac Robotic Wall Scabbler was used in 2000 to decontaminate the North Gallery wall at Test Area North.

Test Reactor Area



Established: 1952

Original Mission: Studied the effect of radiation on materials, fuels and equipment using seven reactors, especially the Materials Test Reactor (1952-1970), the Engineering Test Reactor (1957-1981), and the Advanced Test Reactor (1967-present).

Current Mission: Wet storage of spent nuclear fuel; operation of the INEEL's only operational reactor – the Advanced Test Reactor – for research supporting the U.S. Navy and other customers; and to produce isotopes for medicine and industry.

FFA/CO Designation: Waste Area Group 2

2000 Highlights

- Transported spent fuel materials from the Materials Test Reactor canal to storage at the Idaho Nuclear Technology and Engineering Center
- Constructed the Service Waste Water Discharge Facility
- Issued final remediation report to the Agencies (an FFA/CO milestone)
- Completed all VCO tasks established for 2001 in 2000.

2001 Goals

- Complete disposal of legacy low-level waste
- Complete assessments of six recently identified potentially contaminated sites (one site completed)
- Continue groundwater monitoring
- Continue with negotiated VCO tasks
- Begin sampling and characterization of 157 tanks or ancillary equipment (per VCO agreement).

Remediation

Comprehensive Investigation remediation completed

Remediation was completed at the eight contaminated sites identified in the 1997 Record of Decision. The sites, including the Warm Waste Pond, Chemical Waste Pond and Sewage Leach Pond, were covered with soil barriers designed to resist intrusion. Some of the sites, totaling an area of almost eight acres, were then replanted. Institutional controls, which are access or use restrictions to protect current and future users, were installed to complete the remedial effort.

New sites identified

Six potentially contaminated sites have been identified since the original investigation. Five of these sites are underground pipelines that carried acid, diesel and fuel oil; the sixth site consists of surface soils contaminated with lead. These sites will be investigated in 2001.

Reactors to be dismantled

Two small, underwater test reactors will be decontaminated and dismantled at the Test Reactor Area.

The two reactors, the Advanced Reactivity Measurement Facility and the Coupled Fast Reactivity Measurement Facility, are both about the size of a washing machine. They have not been used since 1991 and were defueled in 1997. The reactors are stored in a canal under several feet of water. The water shields workers and the environment from low levels of radiation emitted by the reactors. Before they can be removed, the reactors must be carefully examined and radiation measurements must be taken.

The typical approaches for these operations have been to use radiation detectors and either underwater cameras mounted on long poles or stationary cameras with pan and tilt features. Neither approach provides the desired degree of accuracy and both require a worker to operate the camera. A new remotely operated and submersible technology was used instead – the Remote Underwater Characterization System.

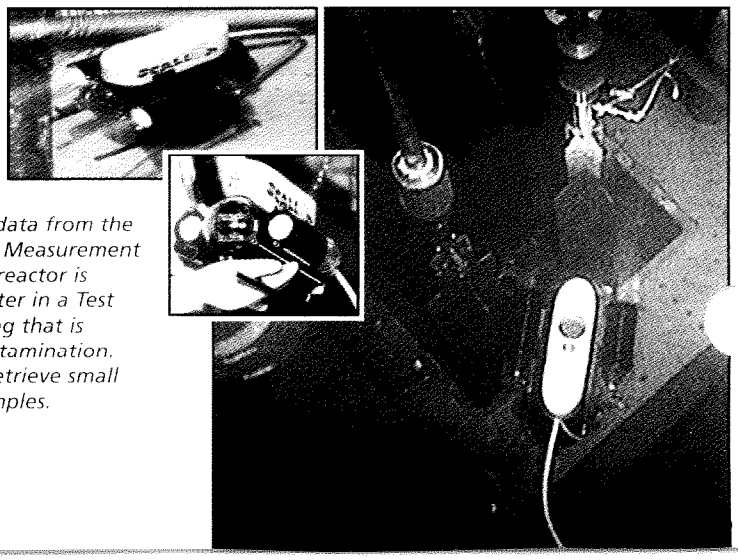
The RUCS is based on a small, commercially available surface vehicle that was modified by DOE's Robotics Technology Development Program. Using the RUCS vehicle is a safer and more cost-effective method of performing close-up inspection and radiation measurements in confined underwater spaces.

The INEEL plans to remove all contaminated equipment and materials from the building, and decontaminate and dispose of the water in which the reactors are suspended. The canal will be back-filled so the facility can be used in the future.

Non-radioactive industrial waste will be disposed of at an INEEL landfill, low-level waste at the Radioactive Waste Management Complex and mixed waste at an approved off-site disposal facility.

Reactor removed

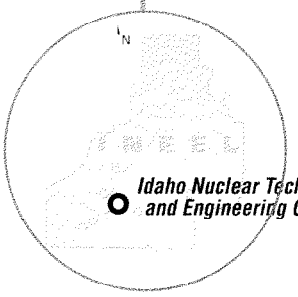
The Engineering Test Reactor was removed from its facility in September 2000. The facility may be used in the future for research and development.



The Remote Underwater Characterization System (RUCS) was used to gather data from the Advanced Reactivity Measurement Facility reactor. The reactor is suspended underwater in a Test Reactor Area building that is scheduled for decontamination. The RUCS can also retrieve small parts and collect samples.

Idaho Nuclear Technology and Engineering Center

A particle size distribution analyzer is used at the Tank Farm to collect data on the liquid residues remaining inside high-level waste tanks after they are emptied. (The analyzer is in a protective container that looks like a cooler.)



Established: Early 1950s

Original Mission: Reprocessed spent nuclear fuels by chemically separating out the reusable uranium (-1992); calcined high-level waste (-2000). *Note:* The facility was previously known as the Idaho Chemical Processing Plant.

Current Mission: Storage of low-level, mixed low-level and high-level waste and spent nuclear fuel; development of treatment methods for high-level waste.

FFA/CO Designation: Waste Area Group 3

Waste Treatment, Storage and Disposal

ılciner operations halted

An era ended at the New Waste Calcining Facility on Jun. 1, 2000 when the calciner was placed on stand-by. This calciner and a previous calciner operated for a combined total of 37 years, converting more than 30,000 m^3 of liquid high-level waste into 4,400 m^3 of calcine, a more easily stored granular solid.

The calciner was placed on standby while DOE determines whether to upgrade and permit the facility to current standards or develop a new method of treating liquid waste.

Waste awaits treatment decision

Approximately 4,400 m^3 of solid calcined high-level waste and 4,500 m^3 of liquid sodium-bearing waste remain in storage at the Idaho Nuclear Technology and Engineering Center.

Some of the liquid sodium-bearing waste at the Tank Farm is stored in five tanks contained in non-compliant "pillar-and-panel" vaults. The 1995 Settlement Agreement requires that, as Jun. 30, 2003, these tanks may no nger be used. Another six tanks are used to store the remaining liquid sodium-bearing waste and may be used through Dec. 31, 2012.

Treatment alternatives for both solid high-level and sodium-bearing wastes are being evaluated in the *Idaho High-Level Waste and Facilities Disposition Environmental Impact Statement*, expected to be issued this summer. Treated high-level waste will be disposed of at a national repository.

Workers continue moving spent fuel

A seven-year campaign to transfer spent nuclear fuel from older underwater storage basins at CPP-603 was completed eight months ahead of the Dec. 31, 2000 deadline. Crews safely moved 1,340 spent fuel units into either modern underwater storage pools or dry storage. Transfer of the fuel to an interim storage facility is an important step in ensuring that it is all in dry storage by 2023 and out of Idaho by 2035 as mandated by the Idaho Settlement Agreement.

The campaign to move all the Three Mile Island Unit-II spent nuclear fuel and core debris from underwater storage at Test Area North into a Nuclear Regulatory Commission licensed, dry storage facility at the Idaho Nuclear Technology and Engineering Center continued in 2000. When the shipments are completed – expected by June 2001 – the dry storage facility will hold 342 containers of spent fuel and core debris.

Highlight

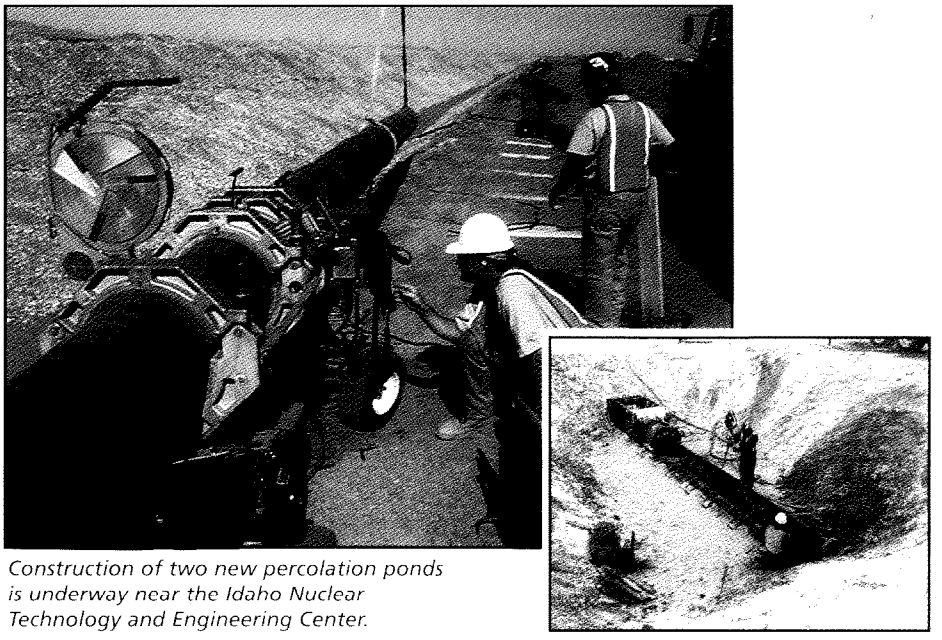
In 2000, workers at the INEEL improved their safety culture and led all other sites in the DOE complex in meeting DOE's new safety management goals.

Footnotes

High-level waste *results from reprocessing spent nuclear fuel and is highly radioactive. When liquid high-level waste is calcined, it presents less environmental risk. Both high-level and sodium-bearing wastes have been managed similarly.*

Sodium-bearing waste *is a liquid waste that results from decontamination and reprocessing operations and is currently classified as a mixed transuranic waste.*

Remediation



Construction of two new percolation ponds is underway near the Idaho Nuclear Technology and Engineering Center.

Investigation of Tank Farm soils begins

The remedial investigation and feasibility study of the Tank Farm soils and the aquifer beneath the Idaho Nuclear Technology and Engineering Center began in 2000. Spills and leaks from many years of handling millions of gallons of high-level liquid waste resulted in significant chemical and radioactive contamination of both the soil and groundwater. Leakage from the Tank Farm transfer lines and piping is responsible for approximately 95 percent of the total radioactivity released to the environment at the facility. The underground storage tanks themselves have not leaked.

The investigation will gather information about the distribution, quantities and concentrations of contaminants in the Tank Farm soil. Additional water sources, the mobility of contaminants and the volume and flow rate of moisture moving through the Tank Farm soil also will be evaluated.

Tank Farm interim action

Workers began constructing a moisture barrier to prevent water from percolating into the Tank Farm soils. The barrier is a thin coating of polyurea sprayed onto a thin matting, which was laid over the soil. The technology was successfully tested at the Idaho Nuclear Technology and Engineering Center in 2000. The barrier will be completed in 2001.

Construction begins on new ponds

Construction of two new percolation ponds for equipment-cooling water began in August. The ponds are being constructed almost two miles from the Idaho Nuclear Technology and Engineering Center.

The construction activity is part of an interim action to begin reducing groundwater that might be contributing to contaminant migration. Even though the water meets regulatory standards, the large volume seeping into soils at the current ponds is keeping the ground partially saturated, possibly contributing to the migration of existing contaminants in the ground.

Instruments are being installed in the ponds' containment structures so scientists can study how water moves through soil and rock to the aquifer, hundreds of feet below the surface. The understanding gained at the percolation pond research park will be applied to environmental restoration, waste management and facility operations problems across the INEEL.

The new percolation ponds are scheduled to be completed in 2001. Installation of piping and the new electric and backup diesel pumps has begun and should be completed by 2002. Other controls, such as grading the land surface and redirecting runoff, have been completed.

New technologies speed remediation

New technologies were used at two of the 46 sites identified for remediation in the 1999 Record of Decision. One of the technologies is a Rapid Geophysical Surveyor (seen on the cover of this report), which looks for variations in the earth's magnetic field to identify the location of buried metal objects.

The surveyor helped investigators locate 94 unmarked gas cylinders, but they could not be removed until their contents could be identified.

The Portable Isotopic Neutron Spectroscopy (PINS) device was used to identify the cylinders' contents. Developed at the INEEL in 1992, it has been used around the world to identify the contents of military ordnance, but this was the first time it had been used to support environmental remediation at a DOE facility.

It took less than four minutes for the PINS device to accurately determine the cylinders' contents, which was identified as highly reactive and corrosive hydrogen fluoride gas. Using PINS saved an estimated $60,000.

The gas cylinders will be treated and disposed of in 2001.

Construction of CERCLA Disposal Facility to begin

A study of the bedrock geology at the Idaho Nuclear Technology and Engineering Center was used to identify and agree on a location for construction of the new INEEL CERCLA Disposal Facility. The 26-acre facility will be used for the disposal of contaminated soil and debris from several INEEL remediation activities.

Construction activities will begin in 2001. The facility is expected to begin receiving waste in 2003.

2000
Highlights

- Received 9 shipments of Three Mile Island-II spent nuclear fuel and core debris from Test Area North at the new dry storage facility (a Settlement Agreement milestone)
- Received 33 Navy and 15 Advanced Test Reactor spent nuclear fuel shipments
- Received one foreign research reactor spent nuclear fuel shipment
- Calcined more than 90,000 gallons of liquid sodium-bearing waste
- Completed moving spent nuclear fuel units from the south basin of facility CPP-603 to facility CPP-666
- Treated 50 high-efficiency particulate air (HEPA) filters (a Site Treatment Plan milestone)
- Submitted treatment schedule for debris backlog (a Site Treatment Plan milestone)
- Began characterizing 44 tanks (per VCO agreement)
- Moved calcine samples to interim storage (per VCO agreement) (already completed).

2001
Goals

- Complete transfer of Three Mile Island-II spent nuclear fuel and core debris to dry storage facility by June 2001 (a Settlement Agreement milestone) (already completed)
- Receive 17 Navy and 12 Advanced Test Reactor spent nuclear fuel shipments
- Prepare to transfer stored Navy-owned spent nuclear fuel back to the Naval Reactors Facility
- Treat 1,854.8 m^3 of liquid high-level waste (a Site Treatment Plan milestone)
- Complete HEPA Filter/Leach Debris treatment (a Site Treatment Plan milestone)
- Reduce liquid waste going to the Tank Farm by 50%
- Install new monitoring wells in perched water zone
- Continue groundwater monitoring
- Initiate field activities at three sites
- Begin construction of INEEL CERCLA Disposal Facility
- Complete construction of Tank Farm interim actions
- Move calcine samples to permitted storage (per VCO agreement)
- Begin characterizing CPP-603 filter material (per VCO agreement)
- Begin characterizing 413 tanks or ancillary equipment (per VCO agreement).

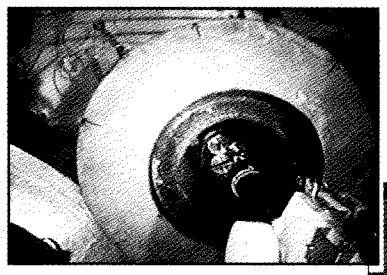
Footnote

*Used **HEPA filters** are treated with the HEPA Filter Leach System, which uses chemical extraction to remove radionuclides and other hazardous constituents.*

Efforts to Achieve Site-wide Waste Compliance Well Underway

DOE officials and Idaho regulators signed an agreement in June 2000, the Voluntary Consent Order, which outlines a 19-year schedule for achieving waste compliance in several areas of concern at the INEEL. The agreement requires DOE to: complete a site-wide inventory of more than 700 storage tanks and their ancillary equipment and ensure the tanks meet applicable environmental standards; determine if uncharacterized wastes are hazardous; transfer hazardous wastes to proper storage areas; and bring inactive underground piping into compliance. The program works closely with D&D&D and other programs to accomplish any of their goals.

All seven VCO milestones for 2000 were met. Three of the seven milestones for 2001 have also been completed as of this Spring.

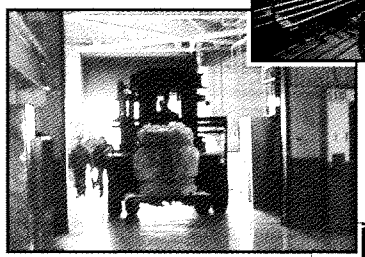


After the calcine canisters are placed in a cask...

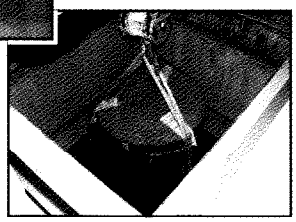
...the lid is placed on the cask...

Calcine samples and handling tools were transferred from CPP-659, an unpermitted storage facility, to CPP-601 D-Cell, an interim storage facility at the New Waste Calcining Facility.

Modifications to the casks are underway so the transfer to a permanent storage facility can be completed by March 31, 2001, a Voluntary Consent Order milestone.

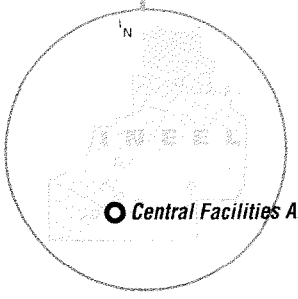


...and the cask is transferred...



...to the CPP-601 D-Cell interim storage facility.

Central Facilities Area



Established: 1940s

Original Mission: Lodged U.S. Navy gunnery range personnel during World War II; provided centralized support for the INEEL (1950s-present).

Current Mission: Treatment and disposal of non-hazardous commercial/industrial waste; centralized support for the INEEL (administrative offices, research laboratories, cafeteria, medical services, construction/support services, workshops, warehouses, landfills).

FFA/CO Designation: Waste Area Group 4

2000
Highlights

- Issued Record of Decision for remediation of three contaminated sites
- Investigated nitrate groundwater contamination
- Conducted hazardous waste determinations for 20 tanks (including one each at the EBR-I National Historic Landmark and the Waste Reduction Operations Complex/Power Burst Facility)(per VCO agreement).

2001
Goals

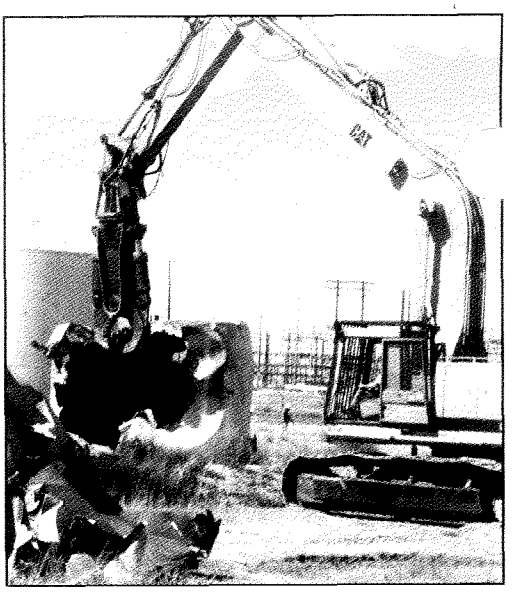
- Begin remediating three sites documented in the 2000 Record of Decision
- Complete characterization of all remaining tanks at CFA (per VCO agreement).

Highlight

The number of temporary waste accumulation areas were reduced in 2000 from 27 to 14 and all 90-day RCRA storage requirements were met.

Waste Treatment, Storage and Disposal

Non-hazardous commercial and industrial wastes continue to be treated and disposed of at the Central Facilities Area landfills. The wastes include non-recyclable materials, such as office wastes.



An above-ground tank is destroyed during decontamination and demolition at the Central Facilities Area in 2000.

Remediation

Comprehensive remedial effort begins

A Record of Decision was signed for the Central Facilities Area comprehensive investigation. The decision identified three sites, which will be remediated one site at a time.

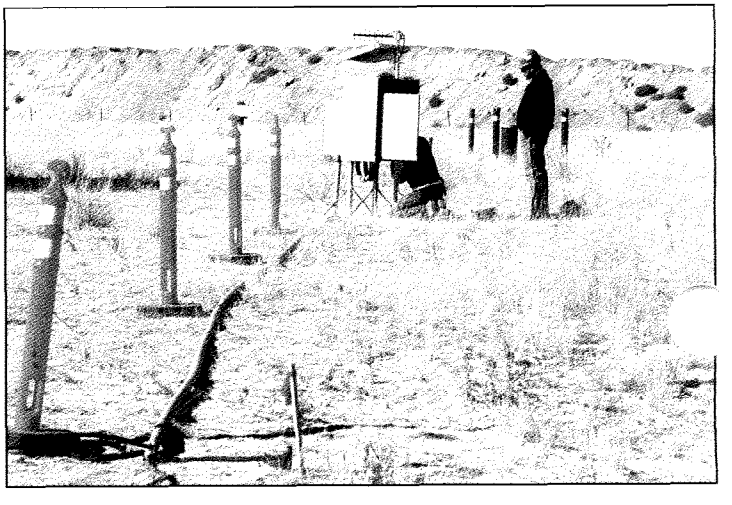
The contaminated soil at the Transformer Yard will be excavated and shipped off-site for disposal. Next, the Sewage Treatment Plant Drainfield will be capped. Finally, a disposal pond will be remediated. Soils at the bottom of the now-dry pond are contaminated with mercury. The soil will be excavated and shipped to the new INEEL CERCLA Disposal Facility located at the Idaho Nuclear Technology and Engineering Center. (The disposal facility is under construction and is expected to open in 2003.)

A recently developed moisture sensor technology is being used at the Central Facilities Area landfills. The sensor monitors the effectiveness of the engineered covers. Probes in the soil send information about the moisture content to an instrument log. The landfill covers are two-foot thick layers of native soil and vegetation.

Modeling supports decision on nitrate contamination

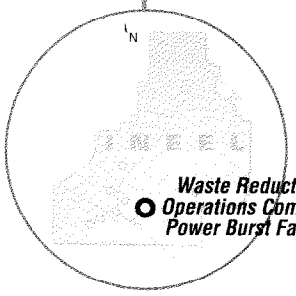
In 2000, an analysis of monitoring data and computer modeling indicated that nitrate contamination is decreasing in the groundwater beneath the Central Facilities Area. Nitrate contamination exceeding drinking water standards was revealed in one well's data in 1999.

New scientific techniques and knowledge of the subsurface helped make a determination that levels of contamination will fall below regulatory limits by 2009. This determination eliminated the need for a feasibility study for this area, resulting in an estimated savings of $1.5 million.



Scientists are using moisture sensors to study how water travels in the soil barriers covering Central Facilities Area landfills.

Waste Reduction Operations Complex/Power Burst Facility



Established: Late 1950s

Original Mission: Research on small power reactors and reactor safety; treatment of DOE's solid mixed low-level waste at the Waste Experimental Reduction Facility, an interim permitted incinerator. *Note:* The facility was originally known as the Power Burst Facility/Auxiliary Reactor Area.

Current Mission: Storage of spent nuclear fuel; treatment and storage of mixed low-level and low-level waste; hazardous and mixed waste volume reduction research. The Auxiliary Reactor Area is now undergoing D&D&D.

FFA/CO Designation: Waste Area Group 5

Waste Treatment, Storage and Disposal

Volume of stored waste shrinks

In 2000, the volume of waste removed from storage, treated and disposed of was much larger than in prior years. Approximately 837 m^3 of mixed hazardous and radioactive waste was treated at the Waste Reduction Operations Complex and 459 m^3 was disposed of off-site.

WERF incinerator closes

The incinerator at the Waste .perimental Reduction Facility was shut down in September 2000 because DOE decided to use commercially available mixed waste treatment facilities.

The WERF incinerator was constructed in the early 1980s as an experimental waste treatment facility. Initially, the incinerator treated low-level radioactive waste. Later, it also treated mixed waste (waste that is both hazardous and radioactive).

During operation, the incinerator treated approximately 10,000 m^3 of low-level and 570 m^3 of mixed waste from both the INEEL and other facilities.

Several factors contributed to the decision to close the incinerator. First, there is insufficient waste in the DOE complex. Also, several commercial treatment and disposal facilities are already available, and more are planned. Finally, new treatment processes are being developed or are already in use at the INEEL or around the DOE complex, including:

- removing metals, suspended solids or organic particles from liquid wastes by ion exchange, evaporation or filtering
- removing particles by water washing or grinding
- containing waste in a polymer matrix
- immobilizing waste by adding cement or grouting, or melting the waste into a glass-like material
- neutralizing, oxidizing or reducing the waste materials.

The INEEL expects to continue meeting Site Treatment Plan milestones for their mixed low-level radioactive waste and is determining how to best treat, store and dispose of this waste now that incineration is no longer an option.

Remediation

Comprehensive remedial effort begins

A Record of Decision for five contaminated soils sites, a sanitary waste system and an underground storage tank was signed in February 2000.

Remediation began in June after the schedule was changed to focus attention on the sanitary waste system and tank. Though originally scheduled to take 26 months, the work took only 7 months. The schedule change saves an estimated $2 million.

Three of the five contaminated soils sites were remediated. Treatment and disposal facilities are being identified for the contaminated debris resulting from the remediation. Approximately 60 m^3 of debris will be shipped to an off-site disposal facility.

A new technology was used to inspect drainpipes during a remedial effort at a Power Burst Facility leach pond. The ROVVER 400 Video Inspection Robot (shown on this report's cover) helped locate poor joints, which may be allowing moisture to enter the tanks.

Remediation of a 58-acre site contaminated with cesium-137 will be coordinated with the new INEEL CERCLA Disposal facility, now under construction near the Idaho Nuclear Technology and Engineering Center.

2000 Highlights

- Signed the comprehensive Power Burst Facility/Auxiliary Reactor Area Record of Decision for five contaminated soils sites, a sanitary waste system and an underground storage tank (an FFA/CO milestone)
- Remediated three soils sites
- Treated 837 m^3 of mixed hazardous and radioactive waste (exceeding Site Treatment Plan milestones) and disposed of 459 m^3 off-site
- Treated 60 m^3 of remediation debris, and sent it off-site for disposal
- Shipped almost 185 m^3 (eight semi-truck loads) of SL-1 soils off-site for disposal.

2001 Goals

- Continue remedial actions at two contaminated soils sites, the sanitary waste system and an underground storage tank (an FFA/CO milestone)
- Meet Site Treatment Plan milestones for mixed low-level waste
- Complete actions on 13 of 44 items identified in the VCO agreement
- Continue characterization of remaining items identified in the VCO agreement.